1. Solve the equation for x and choose the interval that contains x (if it exists).

$$16 = \sqrt[6]{\frac{22}{e^{6x}}}$$

A. $x \in [2.2, 3.4]$

B. $x \in [-1.4, 1.1]$

C. $x \in [-18.6, -16]$

D. There is no Real solution to the equation.

E. None of the above.

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2. Which of the following intervals describes the Range of the function below?

$$f(x) = \log_2(x + 9) - 5$$

A. $[a, \infty), a \in [-10.2, -5.6]$

B. $[a, \infty), a \in [6.2, 11.8]$

C. $(-\infty, a), a \in [-6.1, -2.3]$

D. $(-\infty, a), a \in [4.4, 7.2]$

E. $(-\infty, \infty)$

---

3. Which of the following intervals describes the Domain of the function below?

$$f(x) = -e^{x+1} + 4$$

A. $(a, \infty), a \in [-7, 2]$

B. $(-\infty, a], a \in [-2, 7]$

C. $(-\infty, a), a \in [-2, 7]$

D. $[a, \infty), a \in [-7, 2]$

E. $(-\infty, \infty)$

---

4. Solve the equation for x and choose the interval that contains x (if it exists).

$$21 = \sqrt[7]{\frac{24}{e^{7x}}}$$

A. $x \in [1.59, 3.59]$

B. $x \in [-23.45, -18.45]$

C. $x \in [-0.42, 0.58]$

D. There is no Real solution to the equation.

E. None of the above.

---

5. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$\log_4(-4x + 6) + 4 = 3$$

A. $x \in [1.1, 1.26]$

B. $x \in [-1.83, -1.73]$

C. $x \in [1.28, 1.53]$

D. $x \in [-14.57, -14.44]$

E. There is no Real solution to the equation.

---

6. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$3^{5x+4} = 125^{4x-5}$$

A. $x \in [-28.54, -22.54]$

B. $x \in [-0.35, 1.65]$

C. $x \in [-11, -6]$

D. $x \in [2.06, 3.06]$

E. There is no Real solution to the equation.

---

7. Which of the following intervals describes the Range of the function below?

$$f(x) = -\log_2(x-4) - 7$$

A. $[a, \infty), a \in [-6.4, -1.1]$

B. $(-\infty, a), a \in [-10.7, -5.3]$

C. $[a, \infty), a \in [1.1, 4.8]$

D. $(-\infty, a), a \in [5.7, 7.2]$

E. $(-\infty, \infty)$

---

8. Which of the following intervals describes the Domain of the function below?

$$f(x) = e^{x+9} - 4$$

A. $(-\infty, a), a \in [-9, -1]$

B. $(a, \infty), a \in [2, 11]$

C. $(-\infty, a], a \in [-9, -1]$

D. $[a, \infty), a \in [2, 11]$

E. $(-\infty, \infty)$

---

9. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$5^{-3x+3} = 49^{-4x-4}$$

A. $x \in [-2.1, -1.1]$

B. $x \in [-7.6, -5.6]$

C. $x \in [-0.8, -0.5]$

D. $x \in [-22.4, -19.8]$

E. There is no Real solution to the equation.

---

10. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$\log_3(-4x+8)+4=2$$

A. $x \in [3.61, 4.05]$

B. $x \in [-0.52, -0.19]$

C. $x \in [1.89, 2.2]$

D. $x \in [-0.21, 0.33]$

E. There is no Real solution to the equation.

---

11. Solve the equation for x and choose the interval that contains x (if it exists).

$$14=\sqrt[3]{\frac{9}{e^{7x}}}$$

A. $x \in [-0.91, -0.62]$

B. $x \in [-7.34, -6.26]$

C. $x \in [-0.47, 0.88]$

D. There is no Real solution to the equation.

E. None of the above.

---

12. Which of the following intervals describes the Range of the function below?

$$f(x)=-\log_2(x+4)-9$$

A. $[a, \infty), a \in [-6.5, -3.1]$

B. $(-\infty, a), a \in [-10.4, -7.3]$

C. $[a, \infty), a \in [1.1, 4.8]$

D. $(-\infty, a), a \in [8.1, 9.9]$

E. $(-\infty, \infty)$

---

13. Which of the following intervals describes the Range of the function below?

$$f(x) = e^{x-9} - 9$$

A. $(-\infty, a), a \in [4, 15]$

B. $[a, \infty), a \in [-14, -8]$

C. $(a, \infty), a \in [-14, -8]$

D. $(-\infty, a], a \in [4, 15]$

E. $(-\infty, \infty)$

---

14. Solve the equation for x and choose the interval that contains x (if it exists).

$$19 = \ln \sqrt[3]{\frac{27}{e^{8x}}}$$

A. $x \in [6.4, 7.3]$

B. $x \in [-6, -3.8]$

C. $x \in [-2.8, 0.3]$

D. There is no Real solution to the equation.

E. None of the above.

---

15. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$\log_5 (2x + 6) + 4 = 2$$

A. $x \in [6.5, 11.5]$

B. $x \in [-14, -11]$

C. $x \in [-4.98, 3.02]$

D. $x \in [-19, -15]$

E. There is no Real solution to the equation.

---

16. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$3^{4x+3} = \left(\frac{1}{16}\right)^{-2x-2}$$

A. $x \in [-2.03, -1.11]$

B. $x \in [3.81, 4.49]$

C. $x \in [-1.47, -0.54]$

D. $x \in [-0.19, 0.44]$

E. There is no Real solution to the equation.

---

17. Which of the following intervals describes the Domain of the function below?

$$f(x) = -\log_2(x+7) - 3$$

A. $(-\infty, a], a \in [1.9, 3.8]$

B. $[a, \infty), a \in [-4.2, -0.4]$

C. $(-\infty, a), a \in [6, 9.5]$

D. $(a, \infty), a \in [-8.4, -6.4]$

E. $(-\infty, \infty)$

---

18. Which of the following intervals describes the Domain of the function below?

$$f(x) = -e^{x-6} - 9$$

A. $(-\infty, a), a \in [-10, -8]$

B. $(-\infty, a], a \in [-10, -8]$

C. $(a, \infty), a \in [3, 10]$

D. $[a, \infty), a \in [3, 10]$

E. $(-\infty, \infty)$

---

19. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$3^{5x+2} = \left(\frac{1}{125}\right)^{4x+5}$$

A. $x \in [-28.6, -26.1]$

B. $x \in [2.3, 4.3]$

C. $x \in [-3, -0.9]$

D. $x \in [-0.8, 2.6]$

E. There is no Real solution to the equation.

---

20. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$\log_5 (3x + 6) + 6 = 2$$

A. $x \in [1.33, 12.33]$

B. $x \in [-342.33, -334.33]$

C. $x \in [-2, 6]$

D. $x \in [-347.33, -340.33]$

E. There is no Real solution to the equation.

---

21. Solve the equation for x and choose the interval that contains x (if it exists).

$$22 = \ln \sqrt[5]{\frac{9}{e^{9x}}}$$

A. $x \in [-2, -1]$

B. $x \in [-13.7, -10.5]$

C. $x \in [-5.5, -3.7]$

D. There is no Real solution to the equation.

E. None of the above.

22. Which of the following intervals describes the Range of the function below?

$$f(x) = -\log_2(x-3) + 7$$

A. $(-\infty, a), a \in [-8, -4]$

B. $(-\infty, a), a \in [5, 9]$

C. $[a, \infty), a \in [0, 4]$

D. $[a, \infty), a \in [-4, -2]$

E. $(-\infty, \infty)$

23. Which of the following intervals describes the Domain of the function below?

$$f(x) = e^{x-8} + 2$$

A. $[a, \infty), a \in [-4.1, 0.9]$

B. $(-\infty, a], a \in [0.9, 4.1]$

C. $(a, \infty), a \in [-4.1, 0.9]$

D. $(-\infty, a), a \in [0.9, 4.1]$

E. $(-\infty, \infty)$

24. Solve the equation for x and choose the interval that contains x (if it exists).

$$11 = \ln \sqrt[6]{\frac{7}{e^{6x}}}$$

A. $x \in [-4.5, -2.9]$

B. $x \in [-3.1, -1.5]$

C. $x \in [-12.6, -10.4]$

D. There is no Real solution to the equation.

E. None of the above.

25. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$\log_4(4x+5)+5=2$$

A. $x \in [16.2, 20.3]$

B. $x \in [21.1, 23.6]$

C. $x \in [2.4, 3.2]$

D. $x \in [-2.6, -0.1]$

E. There is no Real solution to the equation.

26. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$3^{3x-3}=16^{2x+3}$$

A. $x \in [11.61, 12.61]$

B. $x \in [-3.67, -0.67]$

C. $x \in [-8.16, -3.16]$

D. $x \in [5, 10]$

E. There is no Real solution to the equation.

27. Which of the following intervals describes the Domain of the function below?

$$f(x)=\log_2(x+7)+1$$

A. $(a, \infty), a \in [-8.9, -5]$

B. $(-\infty, a), a \in [5.9, 9.7]$

C. $(-\infty, a], a \in [-2.2, -0.9]$

D. $[a, \infty), a \in [0.3, 2.2]$

E. $(-\infty, \infty)$

28. Which of the following intervals describes the Domain of the function below?

$$f(x) = -e^{x-6} + 2$$

A. $[a, \infty), a \in [-6, -1]$

B. $(-\infty, a), a \in [0, 3]$

C. $(-\infty, a], a \in [0, 3]$

D. $(a, \infty), a \in [-6, -1]$

E. $(-\infty, \infty)$

29. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$3^{-3x+2} = \left(\frac{1}{343}\right)^{2x-5}$$

A. $x \in [-1.8, -0.4]$

B. $x \in [3, 5.2]$

C. $x \in [0.9, 2.1]$

D. $x \in [-6.4, -4.7]$

E. There is no Real solution to the equation.

30. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$\log_4(2x + 7) + 4 = 2$$

A. $x \in [-6.47, -2.47]$

B. $x \in [2.5, 5.5]$

C. $x \in [2.5, 5.5]$

D. $x \in [11.5, 12.5]$

E. There is no Real solution to the equation.